

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (previously presented) A shaft seal assembly comprising:
 - a case having a radial portion;
 - an elastomeric seal body molded to the case;
 - an elastomeric lip portion extending from the seal body, a first end of said elastomeric lip portion originating adjacent a hinge portion; and
 - a polymeric liner bonded along its full length to the elastomeric lip portion, said first end of the lip portion and a portion of the liner extending over at least a portion of the radial portion of the case, the entire polymeric liner being movable with the elastomeric lip portion about the hinge portion toward and away from the case, wherein the polymeric liner is free from any radial contact with the case.

2. (previously presented) The shaft seal assembly specified in claim 1 wherein:

the case includes the radial portion having a length;

the elastomeric seal body includes a radial portion having a length less than the length of the radial portion of the case; and

the elastomeric lip portion extends over at least a portion of the length of the radial portion of the case.

3. (previously presented) The shaft seal assembly specified in claim 2 wherein the elastomeric lip portion is integrally formed with the elastomeric seal body and extends over the length of the radial portion of the case of which the radial portion of the elastomeric seal body does not extend.

4. (previously presented) The shaft seal assembly specified in claim 1 wherein the polymeric liner is bonded to the lip portion.

5. (previously presented) The shaft seal assembly specified in claim 1 wherein the polymeric liner portion includes hydrodynamic grooves.

6. (previously presented) A seal assembly including:
 - a case having a radial portion;
 - an elastomeric seal body molded to the case and not covering the entire radial portion of the case;
 - an elastomeric lip portion extending from a hinge portion of the elastomeric seal body and covering the radial portion of the case not covered by the elastomeric seal body; and
 - a polymeric liner bonded along its full length to the elastomeric lip portion, a portion of the elastomeric lip portion and a portion of the polymeric liner extending over at least a portion of the radial portion of the case, the entire polymeric liner being movable about the hinge portion with the elastomeric lip portion toward and away from the case, wherein the polymeric liner is free from any radial contact with the case.
7. (previously presented) The seal assembly specified in claim 6 wherein material of the elastomeric lip portion adjacent the elastomeric seal body and the radial portion of the case forms a flexible hinge.
8. (previously presented) The seal assembly specified in claim 7 wherein the polymeric liner is formed from polytetrafluoroethylene.
9. (previously presented) The seal assembly specified in claim 8 wherein the polymeric liner includes a contact surface.

10. (previously presented) The seal assembly specified in claim 9 wherein the contact surface of said polymeric liner includes at least one hydrodynamic groove.

11. (previously presented) A seal assembly for use with a rotating element, comprising:

a case having an axial portion and a radial portion;
a seal body bonded to at least the radial portion of the case;
a hinge portion extending from the seal body adjacent to a terminating section of the radial portion of the case;
a lip extending from the hinge portion; and
a liner bonded along its full length to the lip over the full length of the lip, a portion of the lip and a portion of the liner extending over at least a portion of the radial portion of the case, the entire liner being movable with the lip portion about the hinge portion toward and away from the case, wherein the polymeric liner is free from any radial contact with the case.

12. (previously presented) The seal assembly specified in claim 11 wherein the seal body, the hinge portion, and the lip are integrally formed together.

13. (previously presented) The seal assembly specified in claim 11 wherein the seal body, the hinge portion, and the lip are formed from an elastomeric material.

14. (original) The seal assembly specified in claim 11 wherein the liner is formed from polytetrafluoroethylene.

15. (original) The seal assembly specified in claim 11 wherein the liner includes at least one groove.

16. (original) The seal assembly specified in claim 11 wherein the radial portion of the case has a length that is greater than a radial length of the seal body.

17. (previously presented) The seal assembly specified in claim 16 wherein the hinge portion extends over the radial portion of the case that is not covered by the seal body.

18. (original) The seal assembly specified in claim 11 wherein the liner is bonded to the lip.

19. (previously presented) The seal assembly specified in claim 11 wherein the hinge portion receives more bending stresses than the liner.

20. (original) The seal assembly specified in claim 11 wherein the lip receives more bending stresses than the liner.